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ABSTRACT

This monograph provides complete citations and summaries of literature and studies on factors affecting faculty supply and demand. The monograph is divided into two sections: (1) annotations for approximately 85 articles, books, and reports; and (2) annotations for approximately 75 edited volumes. References include material on the state of the professorate (distributions of faculty by age, rank, tenure, and salary, and faculty attitudes); factors affecting faculty demand (faculty aging and retirement, impact of mandatory retirement legislation, interinstitutional mobility, student enrollment and population trends); factors affecting faculty supply (supply of new doctorates, career choices, pipeline interceptions, recruitment and retention); current and expected faculty shortages; effective management of faculty resources (recruitment and retirement policies, academic work environment, faculty vitality, professional development); and student characteristics (high school graduation rates, college enrollment patterns, trends in degrees awarded, and career choices). (JDD)

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The Literature on Factors Affecting

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An Annotated Bibliography

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The Literature on Factors Affecting Faculty Supply and Demand

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An Annotated Bibliography

Western Interstate Commission for Higher Education
Boulder, Colorado

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Foreword

A large body of literature on factors affecting faculty supply and demand is accumulating rapidly. This expanding body of literature and its diversity reflect the complexity of the issue. We believe an awareness and understanding of this literature is important to higher education and state policymakers if higher education is to maintain its most valued resource – a quality faculty.

This monograph is a companion publication to *Bringing into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers*. This monograph is an annotated bibliography of the material used in the development of *The Primer*. Most of the material cited here was published between 1988 and 1990.

This bibliography was developed by Stephen A. Norrell, WICHE Visiting Scholar, 1989-90 and Vonda L. Kiplinger, Senior Research Assistant.

The study on faculty supply and demand, including the identification of important resource material, was informed by well-known and thoughtful members of an advisory committee of scholars on faculty issues. We appreciate the time and commitment of these individuals and are indebted to them for their quality comments.

The advisory committee was established and this monograph was published with support from Teachers Insurance and Annuity Association - College Retirement Equities Fund (TIAA-CREF). We are grateful for their contribution and for the continuing support of Peggy Heim, Senior Research Officer.

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June 1991

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Introduction

This is a companion to the publication, *Bringing into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers*. Complete citations and summaries of recent literature and studies on factors affecting faculty supply and demand are provided. This monograph is divided into two sections: (1) annotations on articles, books and reports; and (2) annotations for edited volumes. References include material on:

- the state of the professoriate – distributions of faculty by age, rank, tenure, salary, attitudes;
- factors affecting faculty demand – faculty aging and retirement, impact of mandatory retirement legislation, interinstitutional mobility, student enrollment and population trends;
- factors affecting faculty supply – supply of new doctorates, career choices, pipeline interceptions, recruitment and retention;
- current and expected faculty shortages;
- effective management of faculty resources – recruitment and retirement policies, academic work environment, faculty vitality, professional development;
- student characteristics – high school graduation rates, college enrollment patterns, trends in degrees awarded, career choices.

I. Articles, Books, and Reports

Almanac, *The Chronicle of Higher Education*.
September, annual.

Published annually since 1988, this sourcebook is a compilation of data about higher education in the nation and in individual states and the District of Columbia. This sourcebook provides information on faculty distributions by rank, gender, type of institution, salary, tenure, attitudes, and activities. Data also are provided on changes in enrollments, degrees awarded, high school dropout rates, age distribution in the population, and number of institutions per state.

American Association of University Professors.
"Faculty Tenure and the End of Mandatory Retirement,"
Academe, vol. 75(5), 48, September/October 1989.

This is the official statement on mandatory retirement age (MRA) by the American Association of University Professors (AAUP). The statement removes "for age" from the 1940 *Statement of Principles on Academic Freedom and Tenure* with respect to tenure and retirement. It is the position of AAUP that "faculty members have tenure until *they* choose to retire, absent cause for dismissal or financial exigency."

American Association of University Professors.
"The Annual Report on the Economic Status of the Profession,"
Academe, vol. 75(2), March/April, annual.

AAUP reports annually on the salary and total compensation levels of faculty at 1,900 selected institutions of higher education by four institutional types. These data on faculty salaries are based on annual surveys of institutions that collect data on full-time, regular faculty whose major regular assignment is instruction and who do not contribute their services in four- and two-year institutions. Excluded are medical, religious, and other specialized institutions and part-time faculty, temporary faculty, and administrators whose regular assignment includes teaching.

American Council on Education.
1989-90 Fact Book on Higher Education.
New York: Macmillan Publishing Co., 1989.

This sourcebook has been published annually since 1958. Included are demographic and economic data for the U.S. population, data on institutions of higher education (e.g., number of institutions by highest degree offered, public/private control, size by region, academic calendar, number of degrees awarded), enrollments by status and institutional type, data on faculty and staff, characteristics of students, and student financial aid data.

American Historical Association.
"Good News and Bad News for the History Profession,"
Perspectives, 14-15, March 1990.

Historical data (since 1969-70) on the number of history degrees awarded are examined. In 1987-88, for the third year in a row, the number of history baccalaureate, masters, and doctoral degrees conferred increased over the previous year. 1984-85 was the year in which the fewest number of baccalaureate, masters, and doctoral degrees were awarded since 1969-70. The number of doctoral degrees awarded to men continues to decline, while the number awarded to women continues to

increase, so that degrees awarded to women now account for more than one-third of the doctorates awarded in history. The percent of degrees conferred to minorities has fluctuated between 4 and 10 percent since 1975, but small sample sizes preclude identification of any trends.

American Psychological Association.
"The Changing Face of American Psychology: A Report From the Committee on Employment and Human Resources,"
American Psychologist, 41(12), 1311-1327, 1986.

Using historical data (1960 through 1984) from the National Research Council (NRC) and the National Center for Education Statistics (NCES), several trends are identified with respect to characteristics and employment of new doctorates in psychology. These trends include: (1) a significant shift away from "academic-research" degrees toward "health service provider" degrees; (2) decline in the percent of degrees awarded by the "top ten" departments from about 44 percent (1973) to about 33 percent (1983); (3) greater increase in the percent of baccalaureate degrees than in the percent of doctorates awarded to minority persons; (4) increases in the percent of doctoral and baccalaureate degrees awarded to women; (5) a leveling-off in the total number of degrees awarded; and (6) a shift away from academic jobs, as indicated by the facts that nearly one-half of the new doctorate recipients are taking full-time jobs in health care settings and that there are now more new positions in the provider sector than in higher education.

Association of American Universities.
The Ph.D. Shortage: The Federal Role.
Washington, DC, January 1990.

This Association of American Universities (AAU) policy statement discusses current trends that will contribute to a shortage of Ph.D.'s in higher education, including: (1) a decline in Ph.D. production; (2) an "aging" of Ph.D.'s currently in the workforce; (3) underrepresentation of women and non-Asian minorities; (4) decline in the quality of the academic research environment; and (5) increases in the demand for doctorates by industry and government. Several strategies are suggested to revitalize the academic/research enterprise and to restore it to previous levels of effectiveness (but not necessarily size): (1) double the number of predoctoral fellowships and traineeships (with grants, not loans); (2) increase the number of assistantships in federal agencies; (3) expand incentives for underrepresented minorities and women to earn doctorates; and (4) restore the national investment in university research through grants for research activity and facilities.

Astin, Alexander W., Kenneth C. Green, and W. S. Korn.
The American Freshman: Twenty Year Trends, 1966-1985.
Higher Education Research Institute, Graduate School of Education.
Los Angeles, CA: University of California, 1987.

This book is based on a compilation of 20 annual surveys of entering freshmen in two- and four-year colleges in the United States. The study profiles their characteristics, attitudes, values, educational achievements, and future goals. Annual surveys include 200,000-300,000 students at 550-600 institutions. (See Green, K. C., 1989, for an analysis of science students.) The number of students expressing a preference for majoring in English dropped from 4.5 percent in 1966 to about 1 percent over 20 years, while those interested in the fine and performing arts declined from 5 percent to about 2 percent. In other humanities, student preferences went from a high of 9 percent in 1970 to less than 4 percent in 1985. "The data point to sharp and continuing declines in student interest in virtually every field that has traditionally been associated with a liberal arts education" (p. 15-16). Their data also show very sharp declines over the 20 years among entering freshmen in their career preferences for "college teaching" (from 1.8% in 1966 to 0.3% in 1985) and "scientific researcher" (from 3.5% in 1966 to 1.4% in 1985). The results of these annual surveys have been published each year from 1966 to 1989 in *The American Freshman: National Norms for 19xx*.

Austin, Ann E., and Zelda F. Gamson.
Academic Workplace: New Demands, Heightened Tensions.
ASHE-ERIC Higher Education Research Report No. 10.
Washington, DC: Association for the Study of Higher Education, 1983.

Universities and colleges are examined from the perspective of the workplace. External pressures (funding, enrollment changes, diminished public support), internal diversity, bureaucratic infrastructure, and shifting relationships between faculty and administration are analyzed for their impact on the institution, collegiality, and faculty autonomy. The changing relationship between faculty and administrators, in light of the external pressures on administrators, also is examined. Declining autonomy and reduced levels of involvement in decision making and planning are linked to declining faculty morale. Suggested remedies include increased collaboration between faculty and administration, increased awareness and sensitivity of administrators for the "culture" of the institution, and the development of structures that enhance and effectively utilize the strong commitment of employees to the university.

Bader, Jeanne E. (ed.).
1990 Handbook of Research Abstracts on the "Uncapping" of Academic Mandatory Retirement.
Minneapolis, MN: University of Minnesota, 1990.

This handbook provides a compilation of abstracts of relevant research studies which address issues related to the impact of the amendments to the Age Discrimination in Employment Act (ADEA), which will abolish mandatory retirement for tenured faculty based on age by 1994. Plans are to update the *Handbook* annually through 1995.

Belisle, M., and P. Brown.
Humanities Doctorates in the United States: 1987 Profile .
National Research Council, Office of Scientific and Engineering Personnel.
Washington, DC: National Academy Press, 1989.

Demographic descriptions of 1987 humanities doctoral recipients are presented. The report compares 1987 data with data collected in surveys completed every two years since 1977. Inferences regarding attrition are based on statistical estimations rather than on longitudinal sampling methodology and analysis.

Boehmcke, Loraine, Kathleen Kern, Juan Mestas, and Robert Zemsky.
"Enrollment Trends,"
Policy Perspectives 2(2), insert, January 1990.

Enrollment trends between 1947 and 1987 are analyzed in terms of full-time equivalency (FTE), headcount, ethnicity, gender, age, and part-time or full-time status. The analysis, which uses data from the Pew Higher Education Research Program, draws on statistical and demographic data collected by NCES, the U.S. Bureau of the Census, and the Institute for Research on Higher Education at the University of Pennsylvania. Institutional "snapshots" are presented for three institutions (Indiana University at Bloomington, Thomas A. Edison State College in Trenton, NJ, and Heritage College in Toppenish, WA) that specifically address the needs of non-traditional and underserved students.

Bowen, Howard R., and Jack H. Schuster.
American Professors: A National Resource Imperiled.
New York: Oxford University Press, 1986.

This is the first comprehensive study that predicts a shortfall in the supply of high quality faculty due to increased faculty retirements, a decline in recruitment of top students into the academy, and an anticipated enrollment increase in the mid-1990s. The authors describe trends in the characteristics of the American faculty, discuss working conditions and compensation, estimate demand for new faculty (based on nine models) between 1985 and 2009, analyze indicators of potential declining quality of those who are likely to enter academic careers, and make recommendations to institutions and

government to avert shortfalls in the number of qualified faculty. The study draws in part on site visits to 38 institutions and interviews with more than 500 faculty and administrators.

Bowen, William G., and Julie Ann Sosa.
Prospects for Faculty in the Arts and Sciences: A Study of Factors Affecting Demand and Supply, 1987-2012.
Princeton, NJ: Princeton University Press, 1989.

This study focuses exclusively on faculty in the arts and sciences. The conclusions differ somewhat from those of Bowen and Schuster (1986) as to the cause of a faculty shortfall. Bowen and Sosa conclude that the shortage is neither retirement- nor age-related, but, rather, is due to several other factors, including a decrease in production of new doctorates, a projected increase in enrollments and decreases in student/faculty ratios. A shortage in humanities faculty, but a surplus in the biological sciences and psychology, are predicted. Disciplines outside the arts and sciences are not discussed. The authors consider attrition from higher education as a whole but not the impact of mobility of faculty among institutions.

Brown, Patricia Q.
Salaries of Full-Time Instructional Faculty on 9- and 10-month Contracts in Institutions of Higher Education, 1977-78 through 1987-88.
National Center for Education Statistics, Publication No.: NCES 90-331.
Washington, DC: U. S. Department of Education, 1990.

Survey data collected through the Integrated Postsecondary Education Data System (IPEDS) and the Higher Education General Information System (HEGIS) were analyzed to compare 1977-78 salaries of full-time faculty on 9- and 10-month contracts with similar salaries earned during the 1987-88 academic year. The number of faculty increased from 324,300 to 356,300 over the survey period and increases in salaries helped them regain the purchasing power they had in 1977-78. In comparison to the Consumer Price Index (CPI), salaries for 1987-88 were between 0.2 percent and 1.4 percent higher than in 1977-78. The number of women faculty increased from 25.4 percent to 29.1 percent, but their average salaries lagged those paid to male faculty members by about $7,600.

Burke, Dolores L.
A New Academic Marketplace.
New York: Greenwood Press, 1988.

This book describes the contemporary academic marketplace with respect to faculty perceptions regarding characteristics of the academic market; institutional policies; the processes by which faculty members are recruited, selected, and hired; the termination process (voluntary and otherwise); and change in the marketplace since the original *The Academic Marketplace* (Caplow, Theodore and Reece J. McGee, New York: Basic Books, 1958) was published. This study's usefulness is enhanced because the method is modeled precisely on the groundbreaking study published 30 years earlier. The current study illustrates the ways in which appointment, retention, and tenure decisions have remained essentially the same, and ways in which the process has changed, since the earlier Caplow and McGee study.

Carnegie Foundation for the Advancement of Teaching.
The Condition of the Professoriate: Attitudes and Trends, 1989.
Princeton, NJ: Princeton University Press, 1989.

This is the technical report of the results from a survey of 5,450 faculty members from research, doctorate, comprehensive, liberal arts, and two-year institutions (Carnegie classification). Aggregated data and data by institutional type are provided on faculty attitudes about their profession, institution, colleagues, and students. Wherever possible, the 1989 responses (aggregated) are compared to responses obtained by similar surveys in 1969, 1975, and 1984. The data indicate that generally, faculty attitudes about their profession are improving, but have not yet returned to previous peak levels.

Attitudes about the status of the profession, the students taught, and the nature of the job merit attention. Summary comments are based on data which are aggregated across institutional type and the reader should note that there is substantial variation across institutional type.

Chronister, Jay L., and Thomas R. Kepple, Jr.
Incentive Early Retirement Programs for Faculty: Innovative Responses to a Changing Environment.
ASHE-ERIC Higher Education Report No. 1.
Washington, DC: Association for the Study of Higher Education, 1987.

This ASHE-ERIC monograph discusses flexible retirement systems, with emphasis on early retirement incentive programs (ERIPs). The authors cite recent changes in the higher education environment as the motivation for development of ERIPs, and discuss methods of assessing their feasibility. A selection of ERIPs, and institutional experiences with them, are described. The authors conclude that: (1) although often thought of as a means of conserving resources, a specific ERIP may not save money and may not have been designed to do so (e.g., ERIPs may be used to increase academic quality and flexibility rather than to reduce costs, and while showing no immediate savings, offer opportunities for long-term cost effectiveness); (2) ERIPs tend to be more successful, at least from the perspective of the employee, when they include counseling and planning programs which assist employees during the transition; and (3) a critical component of a successful program is the assurance that the employee's standard of living after early retirement will be protected and will not be significantly lowered by the decision to retire early.

Clark, Burton R.
The Academic Life: Small Worlds, Different Worlds.
Princeton, NJ: Carnegie Foundation for the Advancement of Teaching, 1987.

Descriptions of the development and present status of the professoriate, including the perceptions of the faculty about their own environment, are presented. While the book presents a picture of general satisfaction, there are notes of discord and the generalizations presented by Clark must be interpreted carefully. This description of the profession is based on the 1984 Carnegie survey of about 5,000 faculty and on personal interviews of 172 faculty and 67 administrators, associated faculty, union representatives, and faculty leaders at 16 four-year and two-year institutions. The remaining interviewees were from medical schools (36) and "other fields" (31). Collectively, the sample represents only about 1.5 percent of the population of full-time faculty.

Collins, Eileen L.
"Staff Shortages: Meeting the Scientific and Technical Staffing Requirements of the American Economy,"
Science and Public Policy 15(5), 35-342, 1988.

Science and engineering labor market trends to the year 2000 are projected using various supply-side and demand-side sources. If present trends continue, there will be a shortage of trained engineers, but not of natural scientists. The expected increases in the numbers of women and minority students obtaining engineering degrees may not be sufficient to compensate for the projected shortfall. Possible market adjustments that may affect the supply of science and engineering graduates include increased employment of foreign students, policy decisions to increase the numbers of women and minority students, retention of science and engineering graduates in those fields, recapturing and retraining engineers who are no longer in the field, increased substitution of capital equipment and software as a replacement for personnel, and continued or expanded use of personnel with relevant training who have not completed science and engineering degrees.

Consortium on Financing Higher Education (COFHE).
...rly Retirement Programs for Faculty: A Survey of Thirty-Six Institutions, 1987.
Cambridge, MA: Consortium on Financing Higher Education, November 1987.

Faculty retirement patterns between 1982 and 1986 at 36 institutions with early retirement incentive programs (ERIPs) were analyzed to determine if lifting the mandatory retirement age (MRA) from 65 to 70 would, in fact, cause faculty to delay retirement. Data were available on more than 5,500 faculty retirees. Sixty-two percent of all faculty were tenured, although there was considerable variation across institution type and discipline. Definite age peaks were observed. The *average* retirement age across all types of institutions increased from 64.6 years in 1982 to 66.0 years in 1985, with 28 percent retiring only when they reached the MRA. However, at one-third of the institutions the average retirement age either remained the same or declined slightly. The average retirement ages for the independent institutions were consistently higher than for the public institutions in the sample. Thirty-nine different ERIPs from 28 institutions were analyzed. Factors that would make early retirement more attractive were identified and analyzed for cost and effectiveness.

Consortium on Financing Higher Education.
Inventory of Campus Activity on Faculty Retirement and Benefit Issues, COFHE Institutions - 1988.
Cambridge, MA: Consortium on Financing Higher Education, August 1988.

A summary of activity on COFHE campuses relating to the issue of retirement and benefits available to retirees is presented. Summaries of what activity is occurring, committee charges and reporting dates, consultants, and contents of databases on faculty and retirees and retirement programs are included. This report is a useful resource of information about how COFHE campuses are beginning to address the issues raised by the amendments to the Age Discrimination in Employment Act (ADEA).

Consortium on Financing Higher Education.
COFHE Faculty Retirement Benefit Study, 1988.
Cambridge, MA: Consortium on Financing Higher Education, December 1989.

This study reports the results of a survey of 23 COFHE institutions on information about benefits offered to retired and emeritus faculty. Demographic data include number and age of regular, retired, and emeritus faculty, how emeritus status is awarded, and local residency of retirees and emeritus professors. Data on several benefits also are provided, including communication with retirees, pre-retirement counseling, faculty club membership, and a full range of perquisites to assist the retiree in maintaining some level of activity and contact with the academy. Although few data are available on the cost of providing amenities and benefits to retirees and emeriti, the report suggests that benefits and amenities often make the transition to retirement easier and could be an important factor in encouraging older faculty to take advantage of retirement opportunities.

Coyle, L. S., and D. H. Thurgood.
Summary Report 1987: Doctorate Recipients from United States Universities.
National Research Council, Office of Scientific and Engineering Personnel.
Washington, DC: National Academy Press, 1989.

This summary report gives a demographic description of 1987 doctoral recipients, with emphasis on recipients in the natural sciences and engineering. The report provides data on degrees by gender and ethnicity. A summary report is published annually as *Summary Report 19XX: Doctorate Recipients from United States Universities.*

Creswell, John W., Jay L. Chronister, and Martha L. Brown.
"The Characteristics and Utility of National Faculty Surveys."
In Lenth, Charles S. (ed.), *Using National Data Bases*
New Directions for Institutional Research.
San Francisco, CA: Jossey-Bass, forthcoming, 1991.

This chapter describes the 20-year history of large-scale, national surveys of faculty and discusses their utility for policymakers, institutional researchers, and secondary researchers. Twelve surveys and the primary issues addressed are listed; unusual or unique characteristics of the surveys are presented; and the advantages and limitations of each survey are discussed. In addition, recommendations for increasing the utility of faculty surveys are presented. These recommendations reflect (1) the need for common data elements and definitions; (2) the need for better survey documentation, increased accessibility, and a better communication network among those interested in research on faculty; and (3) the need for better coordination of national surveys.

Drew, D. E., and J. A. Tronvig.
Assessing the Quality of National Data About Academic Scientists.
Claremont, CA: The Claremont Graduate School, June 1988.

This report was prepared for the National Science Foundation. Although it focuses on scientists and engineers, it probably reflects accurately the state of faculty databases in all disciplines. This report found that the survey data which were available at the time were of limited usefulness for planning and policy decision making because they were old, not representative, and there was poor comparability among surveys.

Dorsey, Barry M., and Lori A. Lavery.
Faculty Shortages: The State Perspective.
Denver, CO: State Higher Education Executive Officers, August 1989.

This survey was prepared for the State Higher Education Executive Officers (SHEEO) to determine the number of faculty who are aged 55 or older. Although only 23 states and the District of Columbia were able to provide the data requested, information on more than 114,000 faculty members was obtained. Twenty-one percent (23,835) of these faculty were 55 or older, suggesting that there will be a sizable number of retirements within the next 10 years. Also, among the 16,836 faculty at institutions where annual age data were available, 37 percent (6,215) were aged 60 or older. No data are provided about the faculty age profile below age 55.

Ehrenberg, Ronald, Hirschel Kasper, and Daniel Rees.
"Faculty Turnover at American Colleges and Universities: Analyses of AAUP Data."
Presented at the national meeting of the American Economic Association
in Atlanta, GA, December 1989.

Data collected for the AAUP annual report on the economic status of the profession are used to model faculty turnover rates (cohort survival rates) by institution and rank from 1970-71 through 1988-89. Reasons for non-retention from one year to another varied with rank and included voluntary mobility (to accept a position at another institution or outside academe), involuntary mobility (denial of tenure, non-retention), and retirement. The data indicate that salary levels affect retention of assistant and associate professors.

Ehrenberg, Ronald G.
"Academic Labor Supply."
Part III, Chapters 6-10, in Clotfelter, Charles T., Ronald G. Ehrenberg, Malcolm Getz and
John J. Siegfried, *Economic Challenges in Higher Education.*
Chicago, IL: University of Chicago Press, 1991.

This essay provides a comprehensive review of the literature and available data regarding academic labor supply. The discussion reviews background data on the academic labor market and new Ph.D.

production; addresses the current faculty's age structure, the relationship of age to productivity, retirement trends and policies, and female and minority representation in academe; describes a schematic model of academic labor supply, as well as underlying trends that have contributed to projections of future faculty shortages; presents a general model of occupational choice; and discusses factors that contribute to the decision to undertake and complete doctoral study. The essay concludes with a discussion of whether a shortage of American doctorates would really have a substantial negative impact on academe, whether foreign scholars and American-trained foreign doctorates could lessen the impact, and whether a shortage is likely to occur. Implications for future research and policy needs are summarized.

El-Khawas, Elaine.

Campus Trends, 1990.
Higher Education Panel Report No. 80.
Washington, DC: American Council on Education, 1990.

This is the seventh report from an annual series of surveys designed to provide current information on changes in American colleges and universities. This report focuses on academic officers' (e.g., academic vice presidents, provosts, deans) perceptions with regard to issues pertaining to college and university faculty and the academic labor market, reflecting concern for the shortages predicted in the coming decade, and on general education requirements. With regard to faculty, the following primary issues are addressed: faculty hiring, retirement, and replacement; characteristics of faculty; the changing environment for college faculty; and indications of a changing academic labor market and institutional responses to those changes. As indicated in the previous year's report, many higher education institutions are already experiencing greater difficulty in hiring faculty, in terms of both getting top applicants to accept positions and taking longer to find qualified persons to fill faculty positions.

El-Khawas, Elaine.

Campus Trends, 1989.
Higher Education Panel Report No. 78.
Washington, DC: American Council on Education, 1989.

This is the sixth report from an annual series of surveys designed to provide current information on changes in American colleges and universities. Emphasis is placed on the state of the faculty and recruitment for new faculty, activities to enhance minority access, assessment issues, and trends in general education. Reporting institutions indicate increases in open faculty positions and difficulty in recruiting faculty.

Ellis, S. D., and P. J. Mulvey.

Employment Survey 1987.
AIP Report, AIP Pub. No. R-282.11.
New York: American Institute of Physics, December 1988.

The employment status and starting salaries of physicists and astronomers who received degrees in 1987-88 are reported. Fifty-nine percent of new physics and astronomy doctorates enter postdoctoral programs; 28 percent accept full-time employment. Only 9 percent of these doctoral recipients were "not employed and seeking" by winter, 1987-88, while a higher portion of the masters (14%) and bachelors (17%) recipients were still unemployed. Among employed doctoral recipients, 28 percent began careers in academe, while 72 percent went to other sectors. Significantly, the entry level salary ("median monthly salary") of doctoral physicists in academe averaged $1,300/month *lower* than that of non-academicians. Moreover, doctoral recipients entering academe earned starting salaries that were, on average, about $200/month *lower* than those of masters level physicists who began careers in the private sector. Nineteen percent of all full-time employed doctoral physicists and 41 percent of all postdoctoral positions were held by non-U.S. citizens.

Ellis, Susanne D., and Patrick J. Mulvey.
Enrollments and Degrees.
AIP Report, AIP Pub. No. R-151.26.
New York: American Institute of Physics, July 1989.

Enrollment patterns of, and degrees granted from, bachelors, masters, and doctoral degree granting institutions from 1977 to 1988 are reported by region, ethnicity, national origin, and institution type. There were modest increases in the number of physics and astronomy degrees awarded between 1977-78 and 1987-88 (bachelors 16%, masters 22%, and Ph.D.'s 18%). Based on the number of graduate enrollments, 1,250 new physics doctorates are projected to be conferred in 1993, up from 1,150 in 1987-88. The number of first-year graduate students increased by 28 percent between 1979-80 and 1988-89. The number of foreign students increased by 77 percent, accounting for a large portion of the total increase; they increased their share of first-year graduate enrollments from 30.3 percent to 41.7 percent during this 10-year period. The number of teaching assistantships held by foreign students increased by 18 percent since 1984-85 to about one-half of all teaching assistantships available in masters and doctoral degree granting institutions.

Ellis, Susanne D., and Patrick J. Mulvey.
1987-88 Graduate Student Survey.
AIP Report, AIP Pub. No. R-207.21.
New York: American Institute of Physics, July 1989.

Results from the 1987-88 survey of graduate physics and astronomy students are discussed. The percent of doctoral recipients in physics and astronomy who choose postdoctoral studies has increased steadily since 1978, but the percent increase was greater for foreign students (from 32% to 62%) than for U.S. citizens (from 34% to 54%). Of the 1987-88 class of physics and astronomy doctoral recipients, 59 percent chose postdoctoral appointments, 34 percent began full-time jobs, and only 4 percent were seeking employment within one year. They needed between three and nine years (median = 5.7) of full-time study to complete their degrees. Forty percent of all physics and astronomy graduate students and 38 percent of doctoral degree recipients were foreign nationals. Of 7,327 student respondents, 2,502 were identified as minority students, but only 282 were U.S. citizens (about 4%). Among 682 doctoral recipient respondents, 315 represented minority groups, but only 37 (5.4%) were U.S. citizens.

Gamson, Zelda F., Dorothy E. Finnegan, and Ted I. K. Youn.
"Assessing Faculty Shortages in Comprehensive Colleges and Universities."
Working Paper #2, The New England Resource Center for Higher Education.
Boston, MA: University of Massachusetts at Boston, Fall 1990.

After reviewing briefly the "national picture" with respect to a projected faculty shortage in the next 20 years, the authors focus on the expected impact of changes in the faculty labor market for comprehensive universities. Relying on Bowen and Sosa's projections (1989), the authors examine replacement demand, exits from academe (for retirement and non-retirement reasons), enrollment, and student-faculty ratios for comprehensive institutions. Also presented are the preliminary results of a field study of comprehensive colleges and universities in New England. In each institution studied, five arts and sciences and professional programs (English, mathematics, education, business, and "a variable fifth department with substantial faculty turnover") were examined with respect to current difficulties in recruiting and retaining faculty; faculty diversity; sources of faculty; and the impact of working conditions.

Gerald, Debra E., and William J. Hussar.
Projections of Educational Statistics to 2001: An Update.
National Center for Education Statistics, Publication No.: NCES 91-683.
Washington, DC: U. S. Department of Education, 1991.

Historical trends are used to develop projections to the year 2001 for a variety of educational topics. In many cases, low, middle, and high projections are offered. Included are projections on: enrollments

in higher education; enrollment in elementary and secondary schools (by grade level); number of high school graduates; higher education degrees awarded; classroom teachers; and expenditures for public elementary and secondary schools.

Green, Kenneth C.
"A Profile of Undergraduates in the Sciences,"
American Scientist 77(5), 475-480, 1989.

Preferences for specific academic majors of the 1988 college freshman cohort are determined from the American Council on Education (ACE) and UCLA's Cooperative Institutional Research Program (CIRP) data. Trends are suggested by comparing the changes in these preferences that occurred between 1966 and 1988. Results are presented for the cohort group and for minority students. The data are based on more than 300,000 students at over 600 two-year and four-year institutions. (See Astin, A. W., 1987.)

Government-University-Industry Research Roundtable.
Science and Technology in the Academic Enterprise: Status, Trends, and Issues: A Discussion Paper.
National Academy of Sciences, National Academy of Engineering, and Institute of Medicine.
Washington, DC: National Academy Press, 1989.

Characteristics of higher education institutions are described for each 10-year period from 1958 through 1988. Historical data include input of financial resources and numbers of faculty and students. Trends that developed during the last decade of the period are used to identify issues that will need to be addressed during the 1990s and beyond.

Hatfield, Mark O.
"Federal Initiatives to Produce More Scientists,"
ASM News, 56(1), 22-23, 1990.

A brief summary is presented of federal legislation introduced to establish programs at the federal level for increasing the supply of qualified scientists at all levels. Programs are proposed for the elementary, secondary, and postsecondary levels. The proposed legislation calls for increasing the number of fellowships, as well as the establishment of a number of cooperative and coordinating agencies, including regional consortia, an interagency coordinating council of all federal agencies involved in pre-college science and mathematics education, and a National Clearinghouse of Science, Mathematics and Technology Education Materials.

Hexter, Holly.
"Faculty Salaries in Perspective,"
Research Briefs 1(1).
Washington, DC: American Council on Education, 1990.

1989 faculty salaries are compared with those of prior years (1971-72, 1978-79, 1982-83, and 1988-89) and with salary levels in other sectors of the economy. The data are reported by rank, type of institution, gender, ethnicity, and discipline. Although salary differentials by ethnicity and gender are reported and acknowledged to reflect differences in rank and tenure status, it is difficult to determine how much of the differential is due to longevity. Recent salary adjustments notwithstanding, long-term salary gains have failed to keep pace with the Consumer Price Index (CPI) and, in terms of 1972 salaries, lag the CPI by 8-12 percent. Some gains in salary have been realized since 1983. When compared to other professional occupations, faculty salaries have improved, but, considering the amount of advanced study needed, are still relatively low. For example, 1988 college faculty ranked only sixth in median weekly earnings of full-time workers in managerial and professional occupations, behind lawyers, engineers, physicians, pharmacists, and advertising and marketing managers.

Huber, Bettina J.

Employment Patterns in Sociology: Recent Trends and Future Prospects.
Washington, DC: American Sociological Association, March 1985.

A comprehensive analysis of educational and employment trends and projections for sociologists and social scientists between 1970 and 2000 is presented. The report includes data on enrollments in higher education, changes in employment opportunities in academe and other sectors, and changes in the distribution of sociologists by age, gender, ethnicity, and employment status.

Institute of International Education.

Open Doors 1988/89.
New York: Institute of International Education, 1989.
Summarized in *The Chronicle of Higher Education* (J. Evangelauf, Nov. 22, 1989).

The number of foreign students attending U.S. universities rose for the second year in a row. Between 1987-88 and 1988-89, that number increased by 2.9 percent, to 366,354 students. Asians accounted for more than half of the students. The most popular fields of study among foreign students were engineering, business management, mathematics, and computer science.

Kellams, Samuel E., and Jay L. Chronister.

"Life After Early Retirement: Faculties' Activities and Perceptions."
Occasional Paper Series #14, Center of the Study of Higher Education, Curry School of Education.
Charlottesville, VA: University of Virginia, January 1988 .

Survey data from early retirees (188 respondents out of 593 retirees surveyed) from institutions with policies of mandatory retirement at age 70 were analyzed to determine which factors influenced them to choose early retirement. Reasons for retiring varied with the relative self-rated productivity rankings. All faculty were influenced by the incentives, but faculty who rated themselves as "high" on productivity were also motivated by other opportunities and challenges. Faculty who rated themselves as "low" on productivity were motivated by "negative pushes" such as diminished sense of professional worth, organizational difficulties, and "burn-out."

Kellman, Dawn, and W. Keith Skelton.

1987 Salaries: Society Membership Survey.
AIP Report, AIP Pub. No. R-311.04.
New York: American Institute of Physics, February 1990.

Data are presented for approximately 8,300 respondents to a survey of a stratified random sample of members of U.S. and Canadian American Institute of Physics (AIP) societies. Annual salary, age, employment sector, and primary work activity as of 1987 are reported by region and gender. Salary differences between academically-employed physicists and astronomers and those working in industry ranged from $11,700 in the East North Central states to $18,000 in the Mountain and New England states. The lowest overall salary of physicists and astronomers was observed in the West North Central region at $42,000. This is primarily the result of the large proportion of academically-employed physicists/astronomers in this region (who, on average, earn the lowest salaries among Ph.D. physicists in the nation). Physicists and astronomers in the Pacific Coast region had the highest median salary, $55,800. At all levels of experience, industrially-employed Ph.D.'s receive the highest salaries, while the median academic salaries continue to fall short of salaries paid to those outside academe. In addition, academically-employed physicists and astronomers were, on average, four years older than those in industry, with overall median ages of 46 and 42 for those academically- and non-academically-employed, respectively.

Kinney, Daniel P., and Sharon P. Smith
"Age and Teaching Performance,"
Unpublished paper, Project on Faculty Retirement.
Industrial Relations Section, Firestone Library
Princeton, NJ: Princeton University, 1989.

This pilot study of tenured arts and sciences faculty at a major Research I institution (Carnegie classification) examined the relationship between faculty performance and age, as well as the effect of uncapping of faculty retirement on the quality of higher education. The study found a small, but statistically significant, relationship between age and teaching effectiveness, as measured by student evaluations. Teaching effectiveness improved with age in humanities and social sciences, but declined slightly with age in the physical and biological sciences. The better teachers in the social sciences were likely to delay retirement, while those in the humanities and natural sciences preferred early retirement. In all cases, the deterioration in teaching was very small, perhaps not even significant in the overall picture. The possibility of the two factors acting cumulatively (i.e., the worst teachers staying longer), among faculty in the natural sciences is discussed.

Kroe, Elaine.
National Postsecondary Statistics, Collegiate and Noncollegiate: Fall 1989.
National Center for Education Statistics, Publication No.: NCES 90-386.
Washington, DC: U.S. Department of Education, 1990.

An estimated 14.4 million students (8.5 million full-time; 5.9 million part-time) were enrolled at postsecondary institutions in the United States in fall 1989. This represents an increase of about three percent over fall 1988 enrollments: two percent at four-year and four percent at two-year institutions. Virtually all growth occurred at public institutions. This increase occurred despite a continued decline in the number of 18- to 24-year-olds in the population. About 58 percent of all students were enrolled in four-year institutions, 38 percent in two-year institutions, and the remaining four percent in less-than-two-year institutions.

Lawrence, Janet H., Kathy A. Hart, Vincent P. Linder, Kay Saulsberry, E. M. Dickmenn, and Robert T. Blackburn.
Faculty in Community Colleges: Differences Between Doctorally and Non-doctorally Prepared.
Unpublished report.
Ann Arbor, MI: University of Michigan, School of Education, October 1989.

The authors present results of a survey of more than 3,900 arts and sciences faculty, including 857 community college faculty. Educational beliefs and values, indicators of career satisfaction and personal competence, and opinions of colleagues, institutional environment, and career success were analyzed. Among the 857 community college faculty, 232 had earned doctorates and 113 of those earned their degrees while teaching at the community college where they were employed at the time of the survey. One-third earned their highest degree, including 111 Ph.D.'s, from a research university.

Locke, Carl E., Jr.
"Non-traditional Sources of Engineering Faculty,"
Engineering Education, 74(5), July/August 1989.

The "non-traditional" sources of engineering faculty (industry and government) will become more important to higher education if the traditional source (new doctorates or academically-employed faculty) is insufficient to meet future demands. The non-traditional sources of faculty include early retirees from non-academic jobs; those who have bachelors or masters degrees and have been working in government or industry, but who could enter the academic profession with support for further graduate study; and current part-time faculty. If the non-traditional sources of faculty are to be used effectively, higher education will have to accommodate the differing expectations of these new faculty, as well as reconsider its own academic expectations of these individuals and policies concerning them. These individuals differ from the traditional new faculty in age, work experience, teaching experience

(probably none), salary history, and past work environments and responsibilities. To utilize this resource effectively, institutions must recognize these differences, provide assistance where needed (e.g., in developing teaching skills, understanding university operations, getting outside research funding), and revise relevant policies to provide a better fit between these new faculty and the academic world.

Lozier, G. Gregory, and Michael J. Dooris.
Is Higher Education Confronting Faculty Shortages?
Presented at the annual meeting of the Association for the Study of Higher Education, Baltimore, MD., November 1987.

The authors conclude that the Age Discrimination in Employment Act legislation will not have a major impact on retirement age. While some faculty may remain longer, most will choose to retire at, or close to, the traditional age of 65. The benefits available to faculty are far more likely to influence the decision to retire than is the issue of age. Significant differences in age profiles exist among faculty in the several disciplines which were examined. Projected shortages of science and engineering faculty in the mid-1990s will be particularly acute. From the population studied (22,000 faculty), approximately 20 percent will retire between 1987 and 1994 and another 30 percent will retire between 1994 and 2000. Comparing the 1987-1994 and 1994-2000 periods, the rate of retirement will increase one and one-half times between 1994 and 2000. (A revised paper, including a review of research on factors influencing retirement in the general workforce, is available in *Planning for Higher Education*, 17(2), 1-13, 1988-89.)

Lozier, G. Gregory, and Michael J. Dooris.
Faculty Retirement Projections Beyond 1994: Effects of Policy on Individual Choice.
Boulder, CO: Western Interstate Commission for Higher Education, 1991.

The study is designed to answer four research questions using data obtained from an institutional survey of 101 participating institutions of higher education and a survey of 518 faculty aged 55 or older who separated from one of the participating institutions during 1987-88. The research questions are: (1) What faculty retirement patterns are anticipated through the year 2000? (2) Are these patterns likely to change in light of the 1994 elimination of mandatory retirement? (3) Do faculty retirement patterns differ by control or level of institutions? and (4) What factors are most influential in a faculty member's decision about when to retire? From their data, the authors reach the following conclusions: (1) based on varying assumptions about faculty flow and survival rates, the number of faculty retirements in 2002-2003 are likely to be between 24 to 44 percent higher than the number of retirements in 1987-88; (2) the elimination of mandatory retirement on overall faculty retirement will, most likely, result in gradual shifts in retirement patterns; (3) although average retirement age appears to be slightly higher at independent institutions (by about 2 years) than it is at public institutions, earlier results which suggested that the difference in age at retirement might be due to differences in type of retirement program (i.e., defined contribution vs. defined benefit programs) are inconclusive; and (4) financial considerations (primarily overall financial status and eligibility for full retirement benefits) are the most significant factors affecting faculty members' decisions to retire.

Lynton, Ernest A., and Sandra E. Elman.
New Priorities for the University.
San Francisco, CA: Jossey-Bass, 1987.

In Part One, the authors describe the societal changes and demands that are shaping higher education in America. Part Two focuses on institutional strategies for coping with those changes and for responding to increased and changing needs of students. Part Three directs attention to the challenges presented to faculty by these changes, including changes in the present and future faculties, changes and advancements in their fields, awareness of applications in their fields to the "outside world," the relationship of theory to practice, and expanding roles both within and outside of their institutions.

Mann, Sheilah.

"Finding Jobs: Placement of Political Scientists, 1987,"
PS: Political Science and Politics, XXII(3), 696-702, 1989.

A comprehensive analysis is presented of the placement of doctoral political scientists, with comparisons back to 1981. The analysis is by ethnicity, gender, institutional type, and success rate. The success rate for 1981 through 1987 of Ph.D. political scientist job applicants was 72 to 87 percent. The majority of positions (81-91%) were in higher education. Political science was selected as a potential major by 3.2 percent of 1988-89 freshmen when it was included with the humanities and arts. When it was included as a social science, political science rated second, behind psychology (4.1%). Only 15 percent of departments surveyed reported a decline in enrollments, while 18 percent reported a decline in degrees awarded. "Placement Reports" show that the median age of political scientists is relatively young (45.2 years) and that growth in demand will be created by new positions rather than by retirements. Only 10 percent of the departments reported a net loss of faculty, and the number of new faculty hired has increased steadily (with only one "down" year) since 1983-84.

Matier, Michael W.

"Retaining Faculty: A Tale of Two Campuses,"
Research in Higher Education, 31(1), February 1990.

This study examines the factors which influenced the mobility decisions of faculty at two public Research I universities. Within these two institutions 140 faculty reported firm offers of employment, and this analysis is based on these faculty members. This study found that 89 percent had received firm offers from other higher education institutions. Sixty percent of the respondents with firm offers during 1987-88 decided to accept other employment, but no indication is given as to the proportion who accepted employment within higher education versus the proportion who left academe. Factors which were found to be the most salient in a faculty member's decision either to remain or leave were tangible benefits, such as salary, income potential, benefits, better equipped facilities, and better support structures; and intangible benefits associated with their work environment, such as research opportunities, reputation of associates, congeniality of associates, reputation of department, and rapport with departmental leadership. The author points out that these specific results are not generalizable to other higher education settings because they are "highly contextualized by the type, cultural milieu, and geographic location of the two institutions under investigation" (p. 58). Nevertheless, the results may provide insight into the "push-pull" factors which influence mobility decisions. Also, the methodology for data collection and examination of the decision making process are applicable to other higher education settings.

Matier, Michael W.

"Recruiting Faculty: Complementary Tales from Two Campuses,"
Research in Higher Education, 32(1), February 1991.

This is a companion study to "Retaining Faculty: A Tale of Two Campuses" (1990). In this second study, Matier examines factors that may influence a faculty member's or new graduate's decision to accept an academic appointment. Although his research and conclusions are based on two institutions only (both Research I Universities, one urban, one rural), these results are consistent with other research on factors affecting faculty members' decisions to remain at their institutions (cf. Schuster, 1985; Bowen and Schuster, 1986; Rosenfeld and Jones, 1988; Matier, 1990). The author collected data from individuals who were offered positions at these institutions for the 1988-89 academic year, regardless of whether the offers were accepted. The results indicate that of the nine most important factors influencing a faculty member's decision to accept a position, eight were "intangible" benefits: reputation of institution, teaching assignments/opportunities, reputation of department, career advancement opportunities, reputation of associates, congeniality of associates, research opportunities, and rapport with departmental leaders. The tangible benefit, teaching/research load, also was one of the nine most important factors. These nine factors were consistent regardless of where faculty members accepted positions.

McGuire, Michael D., and Jane A. Price.
"Faculty Replacement Needs for the Next 15 Years: A Simulated Attrition Model."
Paper presented at the 29th Annual Forum of the Association for Institutional Research.
Baltimore, MD., May 1989.

This paper describes a study that used faculty size, rank, attrition, and age data from 30 private colleges to project both number of retirees and total faculty replacement needs in the next 15 years. Results suggest that the years 1994-2000 will witness the most acute increase in demand for new college faculty overall, with severe faculty shortages in the sciences most likely in the early years of the next century. A second phase of the study examined probable faculty shortages at the departmental level and summarized faculty supply projections in the high-demand years.

McGuire, Michael D., and Jane A. Price.
"Previewing the Professoriate of the 21st Century: A Multi-Institutional Analysis of Faculty Supply and Demand,"
Paper presented at the annual meeting of the Society for College and University Planning.
Atlanta, GA., August 1990.

The authors present the results of their revised and expanded model of faculty demand; they also examine faculty separation and hiring patterns at independent colleges and universities (four-fifths of which were liberal arts colleges). The data on which the model is based were obtained from: (1) responses from 46 of 125 independent colleges and universities in the Higher Education Data Sharing Consortium (response rate of 37%) to an institutional survey on faculty separation and hiring practices; and (2) data files on individual faculty in 1989-90 from 45 institutions (36% response rate) containing information on academic department, age, ethnicity, gender, rank, year of appointment, year that current rank was achieved, and year of terminal degree. The results indicate that: (1) the faculty retirement rate will increase significantly during the next 20 years (by 37%), with the largest number of retirements occurring during the second decade; (2) total faculty separations (for reasons of retirement and non-retirement) will increase by 42 percent during this period; (3) there will be differential increases in faculty demand and differences in timing of that demand among disciplines over the next 20 years (e.g., the natural sciences will experience a steady increase in retirements and hiring needs over the next 15 years, whereas the social sciences and humanities will see fewer retirements and hires during the next ten years, but sharp increases in both retirements and new hires after that); (4) total annual faculty hires, including replacements and new faculty, are projected to increase by approximately 39 percent (ranging from 7.1% to 8.3% annually) between 1990 and 2010; and (5) a significant proportion of faculty hires may be the result of inter-institutional mobility and promotion from part-time to full-time status, with less reliance on new doctoral recipients as a source of faculty. A discussion of the model's sensitivity to varying the assumptions on which it is based also is provided.

Mortimer, Kenneth P., Marque Bagshaw, and Andrew T. Masland.
Flexibility in Academic Staffing: Effective Policies and Practices.
ASHE-ERIC Higher Education Report No. 1.
Washington, DC: Association for the Study of Higher Education, 1985.

The advantages and disadvantages of several alternative faculty staffing practices are discussed. Alternative practices include increased use of part-time faculty, tenure quotas, longer probationary periods, and retirement incentive plans. The value of retraining programs to enable more efficient use of under-utilized faculty also is discussed.

National Center for Education Statistics.
Institutional Policies and Practices Regarding Faculty in Higher Education.
1988 National Survey of Postsecondary Faculty (NSOPF-88).
OERI, Publication No.: NCES 90-333.
Washington, DC: U. S. Department of Education, 1990.

This is the first report in a series of publications on faculty and institutions of higher education in America. The report presents data obtained through a survey of 424 chief academic officers selected from 3,159 higher education institutions (all types). It focuses on policies and practices affecting 825,000 regular, temporary, full-time, and part-time faculty members. Data are presented on numbers of faculty, composition, changes in employment status, retirement, and attrition. Practices relative to tenure, collective bargaining, and non-salary benefits (retirement, insurance, reduced tuition, child care, flexible benefit programs, and amount of employee contributions) also are reported.

National Center for Education Statistics.
A Descriptive Report of Academic Departments in Higher Education.
1988 National Survey of Postsecondary Faculty (NSOPF-88).
OERI, Publication No.: NCES 90-339.
Washington, DC: U. S. Department of Education, 1990.

This is the second descriptive report on higher education faculty and institutions based on the 1988 National Survey of Postsecondary Faculty. Data were obtained through a survey of 2,423 department chairpersons selected from about 41,000 departments in two-year (10,194) and four-year (30,791) institutions. The report includes data on faculty composition (e.g., number, tenure status, full-time, part-time); department-level policies concerning selection, assessment and advancement of instructional faculty; and opportunities for professional development.

National Center for Education Statistics.
Faculty in Higher Education Institutions, 1988.
1988 National Survey of Postsecondary Faculty (NSOPF-88).
OERI, Publication No.: NCES 90-395.
Washington, DC: U. S. Department of Education, 1990.

The third, and final, descriptive report on postsecondary faculty was derived from a survey of 8,383 faculty from all types of higher education institutions. This report describes the demographic characteristics of faculty (e.g., age, gender, race/ethnicity) and their tenure status, rank, compensation by source, work load and time allocation, job satisfaction, and plans for the future.

National Research Council
Summary Report 1987: Doctorate Recipients from United States Universities
Office of Scientific and Engineering Personnel.
Washington, DC: National Academy Press, 1989.

This report is the twenty-first in a series of reports based on the annual Survey of Earned Doctorates. This survey was distributed to all graduate students who completed their doctoral work in 1987 (32,278) and was completed by 29,991 (93 percent response). The report provides summary data on trends in the number of new doctorates, including field, citizenship status, gender, race/ethnicity, sources of support, indebtedness, postgraduation employment commitments, and time-to-degree.

National Research Council
Summary Report 1989: Doctorate Recipients from United States Universities
Office of Scientific and Engineering Personnel.
Washington, DC: National Academy Press, 1990.

This report is the twenty-third in a series of reports based on the annual Survey of Earned Doctorates. The survey was completed by 31,373 new doctorate recipients (out of 34,319, a 91 percent response rate). The report provides summary data on trends in the number of new doctorates, including field,

gender, citizenship status, race/ethnicity (for U.S. citizens only), sources of support, indebtedness, time-to-degree, and postgraduation plans, and employment sector and work activity in the U.S. labor force. This report also contains a special section on non-U.S. citizen doctorate recipients. Data are provided on number, country of origin, field of doctorate, primary source of support, postdoctoral location and plans, employment sector in the U.S. labor force, and work activity in the U.S.

National Science Foundation.
"Services-Producing Industries Should Lead in Growth of Science/Engineering Jobs Through the Year 2000,"
Highlights: Science Resource Studies, Publication No.: NSF-88-328.
Washington, DC: National Science Foundation, 1988.

Projections of private industry's requirements for scientists and engineers through the year 2000 are presented. Three scenarios were projected (low, middle, and high) using different economic assumptions. The study projects a 35 to 45 percent increase in science and engineering jobs in private industry between the years 1986 and 2000.

National Science Foundation.
Future Scarcities of Scientists and Engineers: Problems and Solutions . Working Draft.
Directorate for Scientific, Technological, and International Affairs.
Washington, DC: National Science Foundation, September 1989.

A survey of the 1980 high school sophomore class is used as the basis for developing projections on the supply of baccalaureate and doctoral degree recipients in the natural sciences and engineering. Job market trends are analyzed, with emphasis on the future demands of industry for technically trained graduates. The study assumes that the proportion of students earning baccalaureate degrees and the proportion of doctorates eventually awarded to that baccalaureate class cohort will remain consistent with prior years. Projections of the available supply of doctoral recipients include predictions that 50 percent of foreign (non-U.S. citizens) graduates of U.S. schools will not enter the U.S. academic labor market.

National Science Foundation.
Science and Engineering Doctorates: 1960-88.
Science and Engineering Education Sector Study Group,
Publication No.: NSF 89-320.
Washington, DC: National Science Foundation, 1989.

This is the seventh report in a series based on data from the Survey of Earned Doctorates. The report describes the number and distribution of science and engineering (S&E) degrees awarded. Detailed statistical tables report the number of S&E degrees according to discipline, ethnicity, gender, educational history of recipient, etc. Information on the annual proportion of S&E degrees awarded and a comparison of National Center for Education Statistics (NCES) and National Science Foundation (NSF) data also are provided.

Newman, L. Jackson, and George D. Kuh.
"Taking Stock: The Higher Education Professoriate,"
The Review of Higher Education 13(1), 63-90, Fall 1989.

The results of a 1986 survey of faculty who teach in higher education are reported and compared to data obtained from similar surveys taken in 1970 and 1980. In addition to demographic information, data about attitudes toward the profession, colleagues, students, and job satisfaction are reported. The data for new faculty (five years or less) are compared with data for the entire population surveyed. Although the estimates are based on a very small sample of academe, they do serve as an interesting example of how data from a single discipline area can parallel the nationally aggregated data.

Norrell, Stephen A., and Judith I. Gill.

Bringing into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers.

Boulder, Co: Western Interstate Commission for Higher Education, 1991.

This report provides a review of the current literature on factors affecting faculty supply and demand. Its objective is to provide information to state and higher education policymakers and planners that might guide the development of policies and practices related to faculty supply and demand. The *Primer* includes discussion of the following issues:

(1) Faculty demographics and current shortages;

(2) Factors affecting faculty demand, including faculty attrition and student enrollment;

(3) Factors affecting faculty supply, including the faculty pipeline;

(4) Projections related to faculty supply and demand and cautions in their use; and

(5) Issues that higher education institutions must address to prepare effectively for the possibility of a faculty shortage, including the need for adequate data and useful models, faculty compensation and recruitment, underrepresentation of minorities and women, academic personnel policies, and faculty professional development.

Summaries of the most frequently cited works on faculty supply and demand, as well as discussions of annual or regularly updated data sources, also are provided.

Pion, Georgine M., Jessica Kohout, and Marlene Wicherski.

Characteristics of Graduate Department of Psychology: 1987-88.

Washington, DC: American Psychological Association, May 1989.

This is a comprehensive sourcebook of data about the faculty in graduate departments of psychology. Information is provided on age, gender, ethnicity, attrition, reasons for attrition, rank, tenure, and salary.

Pion, Georgine M., Marlene Wicherski, and Jessica Kohout.

1988-89 Faculty Salaries in Graduate Departments of Psychology.

Washington, DC.: American Psychological Association, February 1989.

A comprehensive summary of salaries of doctorate-holding, full-time faculty is provided by region, type of institution, academic rank, and years in rank. Data are based on responses from 454 departments (72 percent response rate) and include salary statistics for 5,132 faculty at 273 U.S. doctoral departments, 1,488 faculty at 141 U.S. masters departments, and 494 faculty in 17 Canadian departments. Canadian salaries are adjusted for the exchange rate (assumes $1 US = $1.15 C) and 10-month contracts. The difference between Canadian and U.S. salaries ranged from +$400 to -$1,300.

Porter, Beverly F., and Roman Czujko.

"Education and Supply of Physicists,"

In *Physics Through the 1990's: An Overview*, 91-114.

Washington, DC: National Academy Press, 1986.

Supply and demand trends in physics from 1961 through 1983 are analyzed and projections made to 2001. Based on faculty profiles of age and rank, it is projected that retirements in the discipline will increase beginning in the mid-1990s. Decreasing enrollments of U.S. citizens (but not foreign nationals) in graduate programs and competition from non-academic sectors, coupled with the expected increase in retirements, will result in a "precarious balance between demand and supply through the early 1990's. Beyond that, there are likely to be more opportunities than there are new physicists to fill them" (p. 114).

Rees, Albert, and Sharon P. Smith
Faculty Retirement in the Arts and Sciences.
Project on Faculty Retirement.
Industrial Relations Section, Firestone Library.
Princeton, NJ: Princeton University, forthcoming, 1991.

In response to the 1986 amendments to the Age Discrimination in Employment Act, the Project on Faculty Retirement was established to study the implications for tenured faculty retirement and to provide institutions with information so that they could take appropriate actions, if necessary, in response to the changes. The study, which focuses on arts and sciences faculty in four-year institutions only, collects data from a small group (33) of purposely selected research, doctorate-granting, and selective liberal arts institutions. The analysis examines the age distribution of the tenured faculty by type of institution, broad disciplinary group, type of pension plan, and mandatory retirement status of the institution. A faculty flow model is used to make projections based on varying assumptions about changes in historical retention rates. Preliminary results of the study are presented in Smith (1991).

Rosenfeld, Rachel A., and Jo Ann Jones.
"Institutional Mobility Among Academics: The Case of Psychologists,"
Sociology of Education, 59, October 1986.

Career histories of academic psychologists were studied to measure career mobility of academics. In general, career mobility is relatively low and usually associated with horizontal movement to another institution or with exits from academe.

Schuster, Jack H.
"Faculty Issues in the 1990s: New Realities, New Opportunities,"
In Jones, Larry W., and Franz A. Nowotny (eds.), *An Agenda for the New Decade.*
New Directions for Higher Education Series, No. 70.
San Francisco, CA: Jossey-Bass Inc, 1990.

Issues that will most affect higher education faculty in the 1990s are addressed. The 1990s are seen as a time of change for faculty, with far-reaching implications for higher education. Much of this change is attributed to dramatic changes in the academic labor market: "A rapidly changing academic marketplace will transform the faculty and shape critical aspects of the faculty's role during the 1990s" (p. 33). Demand for faculty will increase as enrollments expand (due to matriculation of the children of the baby-boomers) and as "unprecedented numbers" of faculty retire. Whether there will be an adequate supply of qualified faculty is uncertain. However, the author offers little optimism for three reasons: (1) the proportion of the most able undergraduates enrolling in Ph.D. programs has decreased for more than a decade; (2) the length of time from baccalaureate to doctorate has increased (now averaging about 10.5 years); and (3) there are indications that it is getting harder to find and hire qualified candidates into academic positions. Thus, the end of this century will see intense competition for qualified faculty and "institution raiding" of faculty will be common. As institutions prepare for a shortage, those "rich in faculty are destined to get richer...while the poor are going to have to scramble mightily just to field a minimally qualified faculty by decade's end" (pp. 37-38). Other issues that are likely to affect faculty well-being and performance include the balance between research and teaching, race and gender equity, undercompensation, and the faculty role in governance. Recommendations for institutional action to resolve these faculty issues are: (1) improve data collection and analyses on faculty issues; (2) encourage highly able undergraduates to consider academic careers; and (3) take steps to rectify the existing underrepresentation of minorities on faculties.

Seldin, Peter.

Changing Practices in Faculty Evaluation:
A Critical Assessment and Recommendations for Improvement.
San Francisco, CA: Jossey-Bass, 1984.

Various dimensions of faculty evaluations, including the development of procedures and evaluation documents, the use of data obtained, and court challenges to tenure and promotion are discussed. The results of a national survey on evaluation of faculty are included, as are examples of successful evaluation instruments.

Shakhashiri, Bassam Z.

"Educating Americans for a Science-Oriented Future,"
ASM News, 56(1), 17-21, 1990.

A summary of the demographic characteristics and academic histories of natural science and engineering students in the 1977 high school sophomore class is provided. According to this study, only slightly more than 1 percent of all high school sophomores interested in the natural sciences and engineering (NS&E) are expected to earn doctorates in these disciplines, and only 27 percent will earn baccalaureate degrees in NS&E. (See NSF, 1989, for a description of the 1980 high school sophomore class.)

Smith, Sharon P.

"Ending Mandatory Retirement in the Arts and Sciences,"
American Economic Review Papers and Proceedings. Forthcoming, 1991.

This paper is based on findings of the Project on Faculty Retirement, which analyzes the implications of uncapping of mandatory retirement age for tenured faculty in the arts and sciences. The analysis is based on data from a small group (33) of purposely selected research, doctorate-granting, and selective liberal arts institutions. The results suggest that, for the prominent public universities and selective liberal arts colleges studied: (1) postponed retirement is more likely to occur when positions primarily involve research, teaching loads are light, and, for faculty who are teaching, their students are good; (2) uncapping does not affect mean age of retirements; and (3) there appears to be little basis for concern over "a future dearth of opportunities for new faculty or minority faculty." However, the elite private research universities that are still capped and whose current faculty tend to remain active until mandatory retirement may have "substantial problems."

Syverson, Peter D., and Dawn S. Robinson.

CGS/GRE Annual Survey of Graduate Enrollment.
Princeton, NJ: Educational Testing Service, annual.

This is an annual report (first report was for the 1986-87 academic year) by the Council of Graduate Schools (CGS) and the Graduate Record Examination (GRE) on the number of students enrolled in graduate programs at American universities. Data are reported according to degree level, gender, ethnicity, citizenship, part-time/full-time enrollment, and first-time enrollment. Subsequent reports will compare current year data with previous years.

Syverson, Peter D., and Shu Zhao.

Graduate Enrollment and Degrees: 1986-1988.
Washington, DC: Council of Graduate Schools, February 1990.

This report provides a summary of findings of the first three years of the CGS/GRE Survey of Graduate Enrollment. The 1988 data collection included 536 institutions enrolling 1,021,919 graduate students. Enrollments in 1988 are presented by level, region, institutional type, gender, ethnicity, and citizenship. Trends in enrollment and degrees awarded are reported for 1986 through 1988 by gender, ethnicity, institutional type, and discipline.

Vetter, Betty M. (ed.).
Scientific, Engineering, Technical Manpower Comments.
Washington, DC: Commission on Professionals in Science and Technology, monthly.

This comprehensive monthly publication contains abstracts of reports related to supply and demand, salary issues, education issues, the status of women and minority scientists and engineers, and federal government activity related to science and engineering (S&E) issues. This publication includes material on S&E faculty issues, including discipline-specific information related to the above topics. Although all of the material included is available in other reports, this publication offers a means for quickly and comprehensively reviewing new publications and recently issued reports.

Washington, V., and W. Harvey.
Affirmative Rhetoric, Negative Action:
African-American and Hispanic Faculty at Predominately White Institutions.
ASHE/ERIC Higher Education Report No. 2.
Washington, DC: Association for the Study of Higher Education, 1989.

This is an analysis of affirmative action theory and practice for African-American and Hispanic faculty at predominately white four-year institutions. The history, supply and demand issues, institutional approaches, reasons for limited success, and external factors which affect academe are examined. The critical roles of chief administrators, faculty, and the hiring process are analyzed and suggestions given for improvement.

Western Interstate Commission for Higher Education.
High School Graduates: Projections by State, 1986 to 2004.
Boulder, CO: Western Interstate Commission for Higher Education, 1988.

This report presents projections of high school graduations through the year 2004 and is based on birth rates and historical cohort survival rates. It projects pronounced increases in the number of high school graduates after 1994 and suggests that if the relative number of these graduates who enroll in postsecondary education is equal to recent historical levels, there will be a significant increase in the number of students in higher education.

Western Interstate Commission for Higher Education.
The Road to College: Educational Progress by Race and Ethnicity
Boulder, CO: Western Interstate Commission for Higher Education, 1991.

This report provides an analysis of data on the school and college-age populations by race/ethnicity for the U.S., regions, states, and the District of Columbia. Data are provided on elementary, secondary, and postsecondary enrollments, high school and college graduation rates, projected high school graduation rates through 1995, and other race/ethnicity data which are indicative of trends in the educational progression of the youth and young adult populations for each of the 50 states and the District of Columbia. The individual chapters report on the educational progression of Asians and Pacific Islanders, Native Americans, African-Americans, Latinos, and White Non-Latinos. Detailed state-by-state tables also will be available in separate supplements to the main report.

Wilson, Suzannah B.
The Implications of Eliminating Mandatory Retirement in Institutions of Higher Learning and Suggestions for Adapting to this Change: A Study of Retired Tenured Faculty.
Unpublished report, Project on Faculty Retirement.
Industrial Relations Section, Firestone Library.
Princeton, NJ: Princeton University, April 1989.

This is a report on a study of 71 normal and early retirees who responded to a questionnaire sent to 95 surviving retirees. All retirees were from the same university, a Carnegie Research I University. The author concludes that faculty retire primarily because they have lost their enthusiasm for teaching or want to pursue other interests and that the elimination of mandatory retirement will not seriously affect

this behavior. The single factor found to be most significant in determining the retirement decision (and ultimately, retirement satisfaction) is the individual's attitude toward retirement before s/he retired. Programs that enhance retirement planning and financing, including phased retirement and benefits and amenities following retirement, would make individuals less reluctant to retire.

II. Edited Volumes

Baldwin, Roger J. (ed.).
Incentives for Faculty Vitality.
New Directions for Higher Education Series, No. 51.
San Francisco, CA: Jossey-Bass, 1985.

Intrinsic and extrinsic factors that affect vitality are identified and strategies are suggested for maintaining, strengthening, and renewing faculty vitality.

1. Incentives in the Academy: Issues and Options
   Roger G. Baldwin and Marsha V. Krotseng
   Enabling faculty members to perform at the highest levels of excellence requires designing and implementing an array of appropriate and effective incentives. Tangible incentives are most often related to extrinsic rewards (salary increases, promotion, funds for travel and other support, etc.). Intangible incentives, or intrinsic rewards, also can have an enormous effect on faculty performance. To this end, the institution should attempt to create conditions in which faculty can "experience the natural benefits of the academic profession" (p. 11).

2. Faculty Vitality: Observations from the Field
   Jack H. Schuster
   Results of a survey of faculty in which the professors themselves assess the conditions conducive to a vital professoriate are presented. The observable, or tangible, factors which bear most directly on working conditions include having appropriate and adequate tools for research, a means for intellectual refreshment, the stimulation of good students, a manageable workload, and adequate compensation. More intangible factors also are essential for a vital faculty, including encouragement by the administrative leadership, a perceived sense of community, academic freedom, and the stimulation of colleagues.

3. Faculty Incentives: Some Practical Keys and Practical Examples
   Zeddie Bowen
   This study focuses on the faculty of the University of Richmond, where the emphasis is on teaching, and faculty typically teach four courses each semester. Tangible incentives include merit pay, grants, and support, including clerical, technical, equipment, library, etc. Intangible incentives include tenure, promotion (status rather than money), release time, sabbatical leaves, and a series of mechanisms for increasing collegiality and professional development.

4. Who has the Role of Building Incentives?
   John M. Bevan
   The special roles of the department chairperson, dean, and director of faculty development in instituting and implementing incentives are discussed and factors that facilitate and inhibit vitality are identified. Key factors facilitating faculty vitality include: decisive leadership and support, an informal environment that promotes personal interaction, a common understanding of mission and corresponding professional expectations, attention to new faculty, attention to senior faculty, rewards that are correlated with talent (i.e., excellence in teaching, research), merit pay, funds for faculty development, faculty autonomy over academic structure and programs (that does not violate the integrity of the program or impede students' progress), and flexible planning. Key factors that inhibit vitality include: insulated departments, departmental structures that promote competitiveness and positions of "turf" control rather than cooperative interaction, limited options for continuing faculty development, false

promises, poor communication, lack of correlation between faculty development and student development goals, and the threat of open assessment.

5. Developmental Needs as Intrinsic Incentives
   Janet H. Lawrence
   The "person-environment fit" is the congruence of the characteristics of the individual with those of the institution. The better the fit, the higher the productivity and level of work satisfaction. Improving the fit is examined from the perspective of developmental and personality needs of the faculty member, with the objective of directing professors' energies in ways that are mutually beneficial.

6. Faculty Vitality: The Professional Context
   William Toombs
   Faculty vitality, in the context of the full, composite professional environment (which includes the institution, discipline, and the academic profession itself), is examined. Focus is on the milieu in which the products of faculty activity are accepted, ignored, or rejected.

7. Faculty Incentives at the College of Charleston: A Case Study
   Paul J. Hamill, Jr.
   This chapter describes a case study of the College of Charleston, where small grants have been used as a faculty incentive program since 1976.

8. Enhancing Faculty Vitality Through Collaboration Among Colleagues
   Neil R. Wylie and Jon W. Fuller
   The Great Lakes College Association is used as an example of how consortia of small colleges can enhance faculty vitality through collaboration with colleagues at other institutions. (See also Neil Wylie in Schuster, Wheeler, and Associates, 1990.)

9. Excellence in Business and Excellence in the Academy
   Theodore J. Settle
   Concepts and practices for accomplishing excellence in the business community are analyzed for application to academe. These include taking innovative action, getting back in touch (personal interactions), sensitivity to the "customer," fostering individual commitment, and instilling unique values (of the institution).

10. Concluding Comments
    Roger G. Baldwin
    A unifying overview of the other nine chapters is provided.

Breneman, David W., and Ted. I. K. Youn (eds.).
Academic Labor Markets and Careers.
The Stanford Series on Education and Public Policy.
New York: Falmer Press, 1988.

This volume is a collection of 10 articles dealing with various dimensions of the academic labor market, including exit and re-entry, part-time faculty, institutional career mobility, gender differences, merit pay and reward systems, academic tenure, and suggestions for further research. [Introduction by Breneman and Youn].

1. Studies of Academic Markets and Careers: A Historical Review
   Ted I. K. Youn
   Five general categories of academic labor market analysis are critically discussed: fixed-coefficient model (A.M. Cartter), human capital theory, screening (job competition) model, institutional ascription model, and structural perspectives on careers. The effects on career mobility of institutional organization and mission, labor market outcomes (different job expectations), prestige of first job, and changes in the size of the professoriate are analyzed.

2. Entry into Academia: Effects of Stratification, Geography and Ecology
   Robert McGinnis and J. Scott Long
   The effects of horizontal (geographical location) and vertical (institution type) stratification on career development are analyzed. Obtaining a position in a prestigious university (optimal horizontal and vertical) is associated with receiving the resources needed for success. The authors conclude that general, long-term, career success, and therefore selection by candidates, is markedly influenced by vertical and horizontal stratification. A faculty member's pedigree may have more effect on career development than post-doctorate productivity.

3. Institutional Career Mobility in Academia
   Ted I. K. Youn and Daniel Zelterman
   The effects of prestige of one's graduate school, prestige of one's first institution, and mix of research versus teaching activity on career development and mobility of faculty are analyzed. These choices have strong short-term effects (next job) and weaker, but significant, long-term effects (later career mobility). The authors conclude that the markets for research versus teaching faculty are quite discrete and the ability to move from a teaching line to a research line declines significantly by the second or third job.

4. Exit and Re-Entry in Higher Education
   Rachel A. Rosenfeld and Jo Ann Jones
   Data from the American Psychological Association are used to analyze exit and re-entry patterns for psychology faculty (311 men, 311 women) who started their careers in academic institutions. Exit was considerably more likely than re-entry, exit being a nearly irreversible decision. Clinicians were most likely to leave, while productive researchers who were trained at prestigious institutions and who were at research institutions were the least likely to leave. Re-entry was rare and, when it was possible, depended on research activity during non-academic employment.

5. Part-time Faculty and Part-time Academic Careers
   Howard P. Tuckman and Karen L. Pickerill
   The nature of part-time positions, the nature of part-time faculty, and the economic and professional implications for part-time faculty are analyzed. Academic part-time employees are compared to part-time employees in non-academic positions with respect to gender, reasons for being part-time, educational background, etc. The three largest categories of part-timers are (1) persons who hold a different full-time position (not necessarily academic); (2) persons who would like to be full time-academicians but who, for some reason, are not; and (3) students teaching at institutions other than those from which they expect to receive their degrees. Several reasons why part-time employment rarely leads to full-time academic careers are cited and discussed. The social impact on institutions of the growing number of part-time faculty also is discussed.

6. Merit Pay in Higher Education
   W. Lee Hansen
   This chapter begins by describing pay systems in academe; the use of merit pay systems at several institutions is then analyzed. Although the use of merit increments is widespread, their overall effectiveness has been only sparsely researched. Further, there is a dearth of information about how merit pay systems work, how effective they are, and how faculty feel about them. Generally, institutions with collective bargaining agreements tend to provide the smallest relative merit increments (compared to annual increments), while research institutions without collective bargaining agreements generally provide the largest merit increments. Even among the smallest teaching institutions, the emphasis on merit considerably exceeds that at institutions governed by collective bargaining agreements.

7. Gender Differences in the Academic Reward System
   Debra Barbezat
   The results of an extensive statistical analysis of faculty salaries are reported. Gender differences were measured and analyzed to determine whether or not the differentials were due to differences related to qualifications. Although the data indicate that a proportionate salary advantage did accrue to men, that portion of the differential attributable to discrimination had declined significantly between 1968 and 1977. Also, the general increase in salary for female faculty is shown to be due primarily to reduced discrimination, rather than to improvement in the overall qualifications of female faculty members.

8. University Scientists and Entrepreneurs
   Maurice N. Richter, Jr.
   Increasing numbers of faculty are serving as paid consultants or as entrepreneurs. Points discussed in this chapter include the advantages and disadvantages to the faculty member and the institution, ethical and legal issues (including conflict of interest), and practices that encourage appropriate types of entrepreneurship.

9. The Economics of Academic Tenure: A Relational Perspective
   Michael S. McPherson and Gordon C. Winston
   The economic impact of tenure is discussed as a unique mechanism of security in a very specialized job with limited mobility to/from other professions, rather than as a safeguard of academic freedom. The nature of differences between non-academic and academic positions, and the role tenure plays in stabilizing the academic labor force are explained. The tenure system is compared to limited or fixed-term contract systems.

10. Research on Academic Labor Markets: Past and Future
    David W. Breneman
    A historical sketch of research, beginning with the mid-1960s work of Allan Cartter, is presented. The author emphasizes the need for on-going research on the dynamics of faculty supply and demand, the nature of the "determinants of the prestige system in higher education," and the identification of factors that motivate appropriate candidates (especially minority persons and women) to enter academe. The author states that there also is a need for research that will help alter the "boom and bust" cyclic nature of the academic labor market and a need to understand how the peculiarities of specific disciplines contribute to the nature of the whole enterprise.

Holden, K. C., and W. L. Hansen (eds.).
The End of Mandatory Retirement: Effects on Higher Education.
New Directions for Higher Education Series, No. 65.
San Francisco, CA: Jossey-Bass, 1989.

Various implications of the 1986 amendments to the Age Discrimination in Employment Act (ADEA), which will "uncap" retirement by making mandatory retirement at any age illegal, are discussed in eight chapters. All of the data that are presented predate the 1986 Amendments to the ADEA.

1. Tax Changes, Retirement, and Pensions
   Alfred D. Sumberg
   This chapter analyzes the effects of federal legislation on the age when faculty choose to retire. The 1986 ADEA amendments, tax reforms, and other legislation of that year will require changes in retirement pensions in higher education.

2. Uncapping Mandatory Retirement: The Lobbyists' Influence
   Henry J. Pratt
   The political climate and actions that led to the enactment of ADEA and its 1978 and 1986 amendments are described. The roles played by key legislators, the American Association of Retired Persons, the American Federation of Teachers, the American Council on Education, and the American Association of University Professors are described.

3. Retirement Behavior and Mandatory Retirement in Higher Education
   Karen C. Holden and W. Lee Hansen
   The implications of uncapping the Mandatory Retirement Age (MRA) are discussed. Conclusions are based on the delays in retirement that were observed when MRA was raised from 65 to 70. Also included is an analysis of the impact of the MRA changes on costs to institutions, number of available tenure-track positions, and type of institution most heavily impacted. The authors discuss early retirement incentive programs (ERIPs) as a management tool to encourage retirement before the mandatory age is reached.

4. Findings from the COFHE Studies
   Sarah Montgomery
   This is a summary of three studies by the Consortium on the Financing of Higher Education (COFHE): two on arts and sciences faculties, and a third on tenured and tenure-track faculty. (COFHE colleges are all private, and most are located in the northeastern states.) These studies suggest that uncapping will result in more faculty continuing employment beyond age 65. About 50 percent of the faculty will retire voluntarily before age 70, but the average retirement age will be 68.5 with an MRA of 70. This will increase costs and reduce the number of available positions. Uncapping the mandatory retirement age may delay retirements by about two years on the average and ERIPs could be an effective management tool for encouraging faculty turnover.

5. An Economywide View of Changing Mandatory Retirement Rules
   Richard V. Burkhauser and Joseph F. Quinn
   The effects of uncapping MRA on retirement patterns of the general population are compared with changes that might occur within academe. Reductions in the benefit accrual rate after a specified age and increases in Social Security benefits were shown to exert economic pressure to retire early, or at least by the age provided for in the retirement program. However, 1986 ADEA amendments will make mandatory retirement and age-related changes in benefits illegal, changing the "payoff" value of working extra years. Previous changes in MRA policies did not alter significantly faculty retirement patterns and future changes are not expected to do so either. After 1994, institutions will be required to maintain retirement credits and benefits until the faculty member actually retires, but they will not be precluded from offering incentives to retire.

6. Eliminating Mandatory Retirement: Effects on Retirement Age
   Karen C. Holden and W. Lee Hansen
   Before passage of the ADEA amendments of 1986, retirement was expected to occur between the age for "normal retirement" and the age of mandatory retirement (70). ("Normal retirement" is defined as the age at which full retirement benefits first become available.) The effects of changes in MRA policies on retirement age at several institutions are analyzed. The economic benefits of delaying retirement (continued, fixed-rate pension contributions, and state plans) are discussed, as are some strategies (e.g., reduced contributions) that might be used to discourage delaying retirement.

7. Implications of the 1986 ADEA Amendments for Tenure and Retirement
   Oscar M. Ruebhausen
   Alternatives to the traditional tenure system, including "fixed term" and "long term" contracts, are discussed. Retirement at or about age 65 can be maintained by having faculty "voluntarily" accept fixed or long term contracts, and thereby remove any suggestion that retirement was "mandatory." See Finkin (below) for a different interpretation of the Age Discrimination in Employment Act and a different set of suggestions.

8. Tenure After the ADEA Amendments: A Different View
   Matthew W. Finkin
   The legal implications of the ADEA legislation are described. This chapter provides a critique of the Ruebhausen opinion (see above) that tenure should be replaced with fixed-term contracts. Finkin also

discusses the implications for academic freedom from changing traditional tenure on academic freedom.

Levine, Arthur, and Associates.
Shaping Higher Education's Future: Demographic Realities and Opportunities, 1990-2000.
San Francisco, CA: Jossey-Bass, 1989.

This book questions the relationship between demographic projections of population size and higher education enrollment. Several of higher education's key populations – 18-year-olds, adults, Blacks, Hispanics, and Asians – are analyzed to determine their tendency to attend college.

1. Introduction: A Time of Uncertainty
   Arthur Levine
   A series of "snapshots," emphasizing the changes that are occurring in America's population, are presented. The author states that continuation of the trends exemplified by those changes will result in a "new majority," which will have an enormous impact on the nature of higher education in America. Some of these changes are analyzed in the following chapters.

2. Traditional College-Age Students
   Lewis C. Solmon
   Factors that disrupted the "traditionally accepted" relationship between size of the college-age cohort group and the proportion of that group who attend college are analyzed. They include (1) immigration from Asia and Latin America; (2) increasing demand for college graduates with concurrent maintenance of attractive salary differentials between high school graduates and college graduates; (3) slow but steady improvement in high school graduation rates, especially among Hispanic students, and admission (by colleges) of larger percentages of high school graduating classes; and (4) wide regional variation from national data in cohort size, ethnicity, and immigration and migration patterns. As an example of the latter factor, California, Texas, New York, and Florida received more than half of all immigrants, while the West received the greatest number of people from other states.

3. Hispanics
   Gary Orfield
   Demographic trends of college-aged Hispanics are comprehensively analyzed with an emphasis on state and regional variation in number, graduation rate, college attendance rate, social and economic status, and gender. Data from four metropolitan areas (Houston, Chicago, Philadelphia, and Los Angeles) are presented. Hispanics are expected to become the nation's largest minority group, but if present trends continue, they are likely to become the most educationally disadvantaged and "will be increasingly concentrated in low-income minority schools with poor records of graduation and achievement" (pp. 57-58).

4. Blacks
   Gail E. Thomas and Deborah J. Hirsch
   The increased availability of higher education opportunities for Blacks that dominated the 1970s has been replaced by "years of lost opportunity" in the 1980s. This reversal is thought to be due to several factors, including complacency as a result of early successes and gains, weakening of affirmative action policies as a result of the Baake case (Baake vs. U. California, 1979), changes in financial aid policies that favored loans over grants, and the inadequacy of high school preparation. National, state, and regional demographic and socioeconomic trends are comprehensively analyzed. Suggestions for future initiatives include developing a comprehensive data base on minorities and developing a corps of public school teachers who are appropriately trained (bilingual, culturally aware, and competent in their discipline) and ethnically representative.

5. Asians
   Bob H. Suzuki
   Asians, as defined here, are immigrants, refugees, and the U.S.-born descendants of immigrants from Asia. Immigrants or descendants of those from Pakistan and all countries east of it in Southeast Asia, South Asia, and East Asia are included, while those from Soviet Asia and the Pacific Islands are excluded. The six largest groups are Chinese, Filipinos, Japanese, Asian Indians, Koreans, and Vietnamese. The 1965 changes in U.S. immigration laws resulted in a six- to eight-fold increase in immigration of Asians, so that they have become the fastest growing ethnic minority group, experiencing a 143 percent increase between 1970 and 1980. As in the previous two chapters, the demographic, social, and economic characteristics of this population are extensively analyzed. On the surface, Asians have enjoyed a level of success that has cast them as the "model minority." They have a consistently higher rate of enrollment, at all ages and all levels, than any other ethnic group, including Whites. Asian adults also have the highest high school graduation rate of all ethnic groups and proportionally, twice as many Asians as Whites have completed at least four years of college. However, in spite of the fact that Asians have achieved parity with Whites, or even surpassed them in terms of educational achievement and income, discrimination and inequities in income, employment, and access to education still exist. Nevertheless, Asians have been more successful than Blacks or Hispanics in overcoming problems associated with discrimination.

6. Older Students
   William F. Brazziel
   "Older students" (25 years of age and over) comprise 40 percent of all college students and, in 1987, earned 37 percent of all bachelor's degrees. They are the fastest growing among all of the population groups in higher education. The baby boom "bulge" is now between 25 and 45 years old. The baby boom echo is about five years old or younger. The 20-year gap between these population bulges suggests that over the next two decades institutions will have an unusual opportunity to accommodate the older student. Older student enrollment forecasts through 1998 are developed using estimates of the size of the cohort group and estimated participation rates for each group. The estimates are based on data developed through surveys conducted by the National Center for Education Statistics (Higher Education General Information Survey, HEGIS) and the U.S. Census Bureau's Series P-20 reports from the Current Populations Survey. The author also describes factors which tend to discourage enrollments. These include: (1) changes in the prevailing ethos; (2) availability of alternate learning opportunities; (3) loss of interest; (4) decline in the number of "returners" (e.g., women who left to raise families during the baby boom and its echo); and (5) changes in the job market associated with a declining workforce as the population goes through the "baby bust" years. Factors that will encourage enrollments include: (1) upward progression or mobility of an educated workforce; (2) a decreasing number of jobs that do not require advanced education; and (3) demand for technologically trained specialists.

7. Demography is Not Destiny in Higher Education
   Richard A. Easterlin
   The decline in enrollments predicted for the 1980s did not occur. Projections based only on demographic distribution of the population were inaccurate because no provision was made for changes in the proportion of population groups who attended college. For example, between 1975 and 1985, the number of 18- and 19-year-olds declined by 10.3 percent, but the number who attended college declined by only 1.3 percent. There were similar disproportional relationships between changes in the population of 18- to 19-year-olds and percent changes in college enrollment for Hispanics (a 16.6% increase in population, but only a 7.6% increase in enrollment). The projection decline in college enrollment did not occur, in part, because enrollment rates of 18- and 19-year-olds increased by 10.1 percent, off-setting the of 10.3 percent decline in the population. Statistical evidence and possible reasons for a "cohort effect"—i.e., larger cohort groups generally have lower enrollment rates, while smaller groups show higher enrollment rates—are suggested: (1) a decline in the size of the cohort group would tend to enhance the returns of a college education; (2) smaller families generally mean

that parents (and students) are more able to finance a college education; and (3) admission standards may change to accommodate and attract a smaller number of students.

8. Uses and Misuses of Demographic Projections: Lessons for the 1990s
   Carol Frances
   Higher education planning for the 1980s assumed that enrollments would decline as the population of 18-to-22 year-olds declined. The projected enrollment decline did not occur because a larger than expected proportion of this traditional "college age group" attended college and because larger numbers of older cohorts also enrolled. Thus, higher education enrollment increased by 3.7 percent, while the population of 18-to-22 year-olds decreased by 9.7 percent. Frances analyzes the reason for the erroneous projections and suggests additional factors that influence higher education enrollments.

Lozier, G. Gregory, and Michael J. Dooris (eds.).
Managing Faculty Resources.
New Directions for Institutional Research Series, No. 63.
San Francisco, CA: Jossey-Bass, 1989.

This collection of seven papers presents discussions of various dimensions of managing increasingly scarce faculty resources.

1. Academic Personnel Policies and Practices: Managing the Process
   Barbara A. Lee
   An overview of academic personnel decision making is presented. Problems arising from each activity (recruitment, evaluation, promotion, tenure, salary increments, etc.) are briefly described. The need for well developed and complete databases for monitoring the fairness and consistency of personnel decisions is emphasized. The need for joint faculty and administration participation in policy development is stressed, but at the same time, it is recognized that it is the responsibility of the administration to implement those policies.

2. Faculty Renewal and Change
   Shirley M. Clark and Mary E. Corcoran
   The stake of institutions in maintaining a vital professoriate is discussed. Faculty vitality is shown to be a shared responsibility among the faculty member, colleagues, and the institution. Practices that enhance continued professional development, from graduate school through retirement, are presented from an institutional perspective. The special circumstances of post-tenured, mid-career, and older faculty are analyzed.

3. Creative Staffing: Problems and Opportunities
   David W. Leslie
   Non-traditional (temporary, part-time, term, adjunct, etc.) appointments are described and their advantages and disadvantages as tools for coping with faculty shortages are discussed. Non-traditional appointments create management and recruitment problems, are open to exploitation, and may lead to a two-tiered profession, with a cadre of faculty who have no sense of community with the institution or its full-time permanent faculty. While offering opportunities for resource management, the use of non-traditional faculty also may lead to significant problems within the areas of policy, standards, and collective bargaining. On the other hand, this staffing resource also offers significant opportunities, making it possible to gain access to scarce or transiently needed expertise, to respond to unexpected enrollment increases, and to open links to the business and professional communities.

4. The Status of Women and Minorities in the Professoriate:
   The Role of Affirmative Action and Equity
   Kathryn M. Moore and Michael P. Johnson
   Moral and legal pressures are forcing institutions to correct the underrepresentation of women and minorities in the professoriate by implementing affirmative action, not just nondiscrimination, pro-

grams. Department of Labor guidelines are explained. Possible strategies for increased recruitment and retention through those phases of career transition, from recruitment through the awarding of tenure, are discussed.

5. Balancing Faculty Resources and Institutional Needs
   Karen D. Byers, Cynthia A. Linhart, and Michael J. Dooris
   Mission statements notwithstanding, higher education institutions are unique enterprises that have multiple functions and standards of success, and have little in common with traditional business or commercial enterprises (at least managerially). The faculty are a resource whose efficient management requires accurate determination of workload. Several models and modeling techniques for use as management tools are described.

6. The Faculty Pipeline
   Carol A. Yoannone
   This chapter is an annotated bibliography focusing on the faculty pipeline. Fourteen individual studies and analyses, thirteen periodic reports and databases, and seven compendia are cited. Brief descriptions of seven works in progress also are provided.

7. Responding to the Challenge
   Michael J. Dooris and G. Gregory Lozier
   The summary chapter calls for prudent management of faculty resources. Strategies designed to enlarge the "pipeline," modify academic reward structures, and optimize retirement programs are suggested.

Mehrotra, Chandra M. N. (ed.)
Teaching and Aging.
New Directions for Teaching and Learning Series, No. 19.
San Francisco, CA: Jossey-Bass, 1984.

This book includes seven chapters that deal with various dimensions of faculty aging and the prevention of associated problems. An analysis of problems of older faculty, including burnout, changing roles, approaching retirement, etc., is presented. Although written in 1984, the 1986 amendments to the ADEA make this book particularly timely. It provides insight into the special problems and opportunities associated with an aging ("graying") professoriate.

1. Implication of an Aging Faculty for the Quality of Higher Education and Academic Careers
   L. K. George and I. Winfield-Laird
   The authors discuss the rapid expansion of the professoriate in the 1960s, followed by its relatively stable size in the late 1970s and early 1980s, which has resulted in a professoriate that is aging and appears to be "tenured in." Higher education appears, to many, to be a limited or no-growth industry that offers little to attract new recruits into the professoriate. The increasing proportion of senior, tenured faculty may drive personnel costs up, greatly reduce institutional flexibility, prevent recruitment of new talent and new ideas, jeopardize the effectiveness of minority recruitment initiatives, and result in reductions in both enrollments in doctoral programs and the number of doctoral recipients seeking academic appointments. Several intervention strategies are suggested and analyzed. Suggestions include flexible retirement programs, salary reductions (both selective and across the board), salary compression across ranks, retraining, and "out-migration" assistance for those who want to leave higher education.

2. Development Theory as a Guide for Maintaining the Vitality of College Faculty
   C. S. Claxton and P. H. Murrell
   Two theories of life-long development are explored in the context of faculty and administrator career development. Faculty reaction to faculty planning and evaluation, tenure, promotion, and professional development are discussed.

3. The Changing Development Needs of an Aging Professoriate
   Roger G. Baldwin
   This chapter discusses professional development programs that are aimed at the older faculty member. As a rule, professional development programs are directed at early-career faculty and do not recognize the development needs of mid-career (tenured, with 10-20 years of experience) or late-career faculty (approaching retirement). Older faculty may represent a significant, but under-used and under-developed resource. Several opportunities for enriching the careers of older faculty, such as mid-and late-career planning workshops, retirement planning workshops, special small grant programs, released time, cross-institutional exchanges, etc., are discussed.

4. Faculty Age and Teaching
   J. H. Lawrence
   Lawrence discusses certain natural changes which occur during faculty members' professional development and affect their attitudes toward teaching, research, and sense of affinity with the institution. Career stages, and their associated characteristics, are defined in at least two different ways: (1) "career stage" cohort groups, which are defined according to where faculty members are in their career and are categorized into five stages, depending on age, tenure, and approach to retirement; and (2) "demographic" cohort groups, which are defined according to age. The attitudinal, collegial and social, and professional changes that occur over a professional career are discussed.

5. Personal Perspectives of Academic Professionals Approaching Retirement
   B. J. Myers and R. E. Pearson
   Both the approaches to retirement and actual retirement of several faculty members are followed and discussed; the focus is on the retirees' perceived losses and gains. The development and use of pre-retirement programs to assist in preparation for actual retirement are suggested.

6. The Academy of Senior Professionals at Eckerd College
   Leo L. Nussbaum
   An experiment in development of a college by and for senior professionals as an integral component of Eckerd College (St. Petersburg, Florida) is described.

7. Responding to Institutional Concerns
   Chandra M. N. Mehrotra
   This summary chapter highlights many of the strategies developed in earlier chapters.

Schuster, Jack H., Daniel W. Wheeler, and Associates.
Enhancing Faculty Careers: Strategies for Development and Renewal.
New Directions for Teaching and Learning Series.
San Francisco, CA: Jossey-Bass, 1990.

Although this book was not written in response to the faculty supply and demand issue and has faculty vitality as its primary focus, it is especially appropriate as a resource for information on efforts to maintain faculty morale and thereby enhance the professoriate. This edited volume spans the context within which contemporary faculty work, with emphasis on: changing labor market conditions and their implications; various programs designed to address the respective needs of an aging professoriate and the young faculty members who will replace them; case studies of successful campus approaches to integrating professional and personal developmental needs; and a comprehensive bibliography.

1. The Need for Fresh Approaches to Faculty Renewal
   Jack H. Schuster
   A brief history of faculty development is presented. Schuster catalogues recent changes in the conditions of the professoriate, discusses their impact on faculty morale, and argues effectively for enhanced faculty development programs. Changes affecting faculty morale include working conditions, compensation, the nature of the academic labor market, changing and often conflicting expecta-

tions, "congealing" and bipolarization of the faculty, compressed career ladders, and changing values and missions of institutions.

2. Faculty Career Stages and Implications for Professional Development
   Roger G. Baldwin
   Career stages are described in a general sense (career entry, early career, mid-career, late career, and the career plateau) and specifically for faculty members (novice professor, early academic career, mid-career, late career). The unique characteristics and personal and professional needs of each stage are described.

3. An Overview of Research on Faculty and Institutional Vitality
   Carole J. Bland and Constance C. Schmitz
   This is a useful resource guide in which all of the references given in the bibliography are categorized and listed according to type of revitalization program and the component of the institution to which the program is directed (institution, department/college, individual).

4. Strengthening Career Preparation for Prospective Professors
   Jack H. Schuster
   This chapter focuses on the first phase of an academic career: the graduate education of future professors and the role graduate education should have in the preparation of future members of the professoriate – not only as successful researchers, but as full members of the academy. Graduate schools should provide programs, including highly structured graduate teaching assistant programs, that help students learn about higher education, teaching, the ethos of the academic workplace, and the culture and ethics of the profession they are about to enter.

5. Providing Career Consulting Services to Mid-career Faculty
   Daniel W. Wheeler
   The unique characteristics of mid-career faculty (who are 15-20 years into their careers) are discussed in the context of several career consulting programs that assist faculty in making successful transitions through career phases. The characteristics and strategies of successful career consulting programs are identified as are the common obstacles to career transition that are encountered by faculty members.

6. Promoting Faculty Health and Wellness
   Joan DeGuire North and John W. Munson
   The development, role, and appropriateness of programs encouraging faculty wellness are discussed. More than 200 campuses offer wellness programs and 80 percent of them indicated an intention to maintain the programs. The focus of this chapter is on physical health and enhanced social interactions. Chapter 7, on the other hand, focuses on wellness from the perspective of substance abuse.

7. Adapting Employee Assistance Programs for Academic Settings
   Elizabeth P. Hosokawa
   Employee assistance programs (in contrast to Health and Wellness Programs, Chapter 6) focus on detection and correction of substance abuse problems. Factors (stress-producing factors in academe) contributing to substance abuse, emotional, marital, and family problems are identified. The design and implementation of assistance programs are discussed, including: decisions to use internal or external providers, types of services to be provided, staffing decisions, and the relationship of the employee assistance program to the institution's medical benefit package. Critical elements for successful implementation are explained, including administrative endorsement and participation, policy development, detection of problems, confidentially, and publicity.

8. Designing Options for Early Retirement
   Jay L. Chronister
   The chapter begins with a brief discussion of the factors that generated interest in early retirement incentive programs, including the graying of the professoriate, financial constraints, and federal legislation. The nature of early retirement, the incentives commonly offered to encourage participation,

specific programs at specific institutions, and institutional protections are discussed. Faculty participation is described from the perspective of those factors that influence the decision to retire: financial costs and benefits, professional costs and opportunities, and other factors that exert positive and negative influences on the decision to retire. Chronister closes the chapter with suggestions that early retirement programs should be regarded as one part of an overall faculty resource management strategy.

Chapters 9 through 13:

These chapters present five examples of unique and distinctive campus-based faculty renewal programs. They range from a multidimensional, integrated program at the University of Georgia to a consortial approach (Great Lakes Colleges Association) that focuses the resources of several small colleges on an inter-campus faculty development program.

9. A Multidimensional Approach to Faculty Vitality: The University of Georgia
Ronald D. Simpson and William K. Jackson
An integrated, multidimensional approach to maintaining faculty and employee wellness through the integration of "wellness vectors" is presented.

10. Integrating Individual and Organizational Needs: The University of Nebraska
Joyce Polvacs Lunde and Ted E. Hartung
An example of a program that emphasizes the integration of individual and institutional needs directed at the renewal and redirection of mid-career faculty is discussed.

11. Fostering Professional, Personal, and Family Growth: Loyola University of Chicago
Barbara H. Hill
Loyola's career development program, initiated in 1978, focuses on the development of the whole person. It is implemented through a specific Integrating Professional and Personal Growth workshop program for employees and spouses, and is designed to facilitate the development of a balance between professional and personal development needs.

12. Redirecting Faculty Through Organizational Development: Fairleigh Dickinson University
Ann F. Lucas
Fairleigh Dickinson University created the office of professional and organizational development, which was given the responsibilities for assisting the faculty with career adjustment and the university with the organizational changes needed to facilitate faculty adjustment. Activities included faculty retraining (with released time and small grants) and reassignment, buyout of faculty contracts, and career development conferences.

13. A Consortial Approach: The Great Lakes Colleges Association
Neil R. Wylie
The Great Lakes Colleges Association is used as a model of cooperation among small colleges that is directed toward the maintenance of faculty vitality through interaction with colleagues at similar institutions.

14. Building Comprehensive Programs to Enhance Faculty Development
Daniel W. Wheeler and Jack H. Schuster
The principles and strategies developed in the preceding chapters are synthesized into a cohesive list of suggestions for enhancing professional and personal growth which emphasize the importance of integrated programs for enhancing faculty development. The general principles and strategies for development of new programs, enhancement of existing programs, and their successful implementation are discussed.

15. Resource: A Guide to the Literature on Faculty Development
    Carol J. Bland and Constance C. Schmitz
    This section contains a list of recent papers dealing with issues related to faculty vitality, including some, but not all, of those referenced in other chapters of the book.

Seldin, Peter (ed.).
Coping with Faculty Stress.
New Directions for Teaching and Learning Series, No. 29.
San Francisco, CA: Jossey-Bass, 1987.
Factors contributing to faculty stress, including burnout, working environment, part-time faculty interactions, shifting career demands, and conflicts between professional lives and the demands created by family and personal lives, are identified. Short- and long-term strategies directed toward individuals, as well as institutional strategies for reducing stressors, are suggested.

1. Academic Burnout: Faculty Responsibility and Institutional Climate
   R. A. Armour, R. S. Caffarela, B. S. Fuhrmann, and J. F. Wergin
   The factors that contribute to burnout (e.g., monotony, lack of possible advancement, diminished self-worth, lack of community, changing mission, lack of leadership, and limited reward opportunities) and possible solutions to them are discussed and analyzed.

2. Research Findings on Causes of Academic Stress
   Peter Seldin
   Seldin elaborates on how several of the stressors mentioned in the previous chapter detract from the overall effectiveness and well-being of faculty.

3. What Colleges and Universities Can Do About Faculty Stressors
   W. H. Gmelch
   Stress is defined as "one's anticipation of his or her inability to respond adequately to a perceived demand, accompanied by the anticipation of negative consequences due to an inadequate response." A Faculty Stress Index was developed using data obtained through surveys conducted by the National Faculty Stress Research Project (1,920 faculty of all ranks from 184 institutions). Strategies are suggested for each of the five most commonly cited stressors (from most to least stressful: reward and recognition, time constraints, departmental problems, professional identity, and interactions with students) which collectively accounted for about 86 percent of all stress.

4. The Stress-Producing Working Conditions of Part-Time Faculty
   Judith M. Gappa
   Part-time faculty are subjected to different stressors than are full-time faculty. Institutional practices are suggested to protect the rights and salaries of part-time faculty and to enhance their feelings of collegiality with their full-time colleagues.

5. Faculty Stress: The Tension Between Career Demands and "Having It All"
   M. D. Sorcinelli and M. W. Gregory
   The difficulty of a multi-faceted professional life (teaching, research, and service) is complicated by competing demands of family, civic obligations, social relationships, and recreational needs. "Having it all," in this context, means "superstar" success in all dimensions of professional and private lives. The stresses generated in academic careers, while present at all stages, are most acute in younger faculty and flow from the realizations that it is impossible to "have it all," and that having to compromise private lives to ensure success in professional life is not very attractive. A series of individual and institutional strategies for handling or minimizing stress are explored.

6. Short-Term Coping Techniques for Managing Stress
   A. F. Grasha
   Suggestions for the individual faculty member for minimizing the short-term negative impact of many of the stress-producing factors cited in Chapter 3 are provided.

7. Long-Term Stress Management
   J. L. Noel
   This chapter provides suggestions for the individual faculty member for minimizing the long-term negative impact of many of the stress-producing factors cited in Chapter 3.

8. Institutional Preventative Stress Management
   J. C. Quick
   The two preceding chapters suggested what individual faculty members can do to handle stress. This chapter addresses how institutions can reduce the stress burden on their faculty. The complexities of academic freedom, academic institutions, and the faculty themselves, while being the source of much of the stress in academic life, also offer many opportunities for flexibility that could help avoid that stress. Institutions could allow a considerable amount of flexibility in helping faculty find the optimal balance between the multi-faceted professional demands (and opportunities for career development) and the equally complex demands of private lives.

9. The Faculty Renewal Program at the University of Georgia
   R. D. Simpson and W. K. Jackson
   The University of Georgia faculty-directed and administration-supported program of "renewal conferences" is described.

This publication is one in a series produced by the Western Interstate Commission for Higher Education (WICHE), focusing on the factors affecting faculty supply and demand.

Titles in this series are:

Bringing Into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers (2A210), 1991. This study presents a comprehensive review of the literature on factors affecting faculty supply and demand. Its objective is to provide information to state and higher education policymakers and planners to help guide the development of policies and practices affecting faculty supply and demand.

The Literature on Factors Affecting Faculty Supply and Demand: An Annotated Bibliography (2A211), 1991. This is an annotated bibliography of the recent literature on factors affecting faculty supply and demand.

Faculty Retirement Projections Beyond 1994: Effects of Policy on Individual Choice (2A212), 1991. This study examines the age distribution of faculty retirements at 101 institutions employing 35,000 faculty. It examines both historical retirement patterns and the distributions of faculty by age and discipline. Also examined are data from a survey of 500 retired faculty on factors influencing their retirement decision.

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